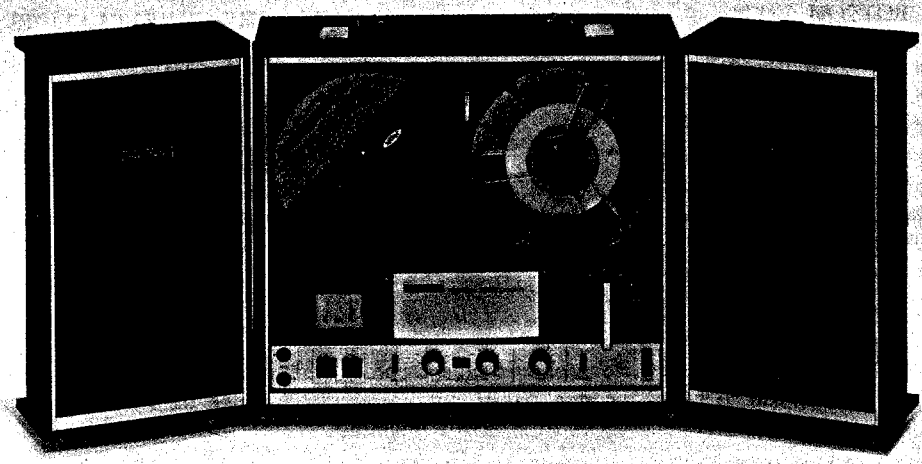
TC-252

Except for USA and Canada



SPECIFICATIONS

Power Requirements: AC 50/60 Hz 100V, 110V, 117V, 125V, 220V & 240V 45W

Track System: Four-track stereo and mono

Reel Size: 7" (18 cm) maximum

Tape Speed: 7½ ips, 3¾ ips and 1⅞ ips (19 cm/s, 9.5 cm/s and 4.8 cm/s)

Recording Time: (with 1,800 ft tape)

Tape speed	4-track stereo	4-track mono
7½ ips (19 cm/s)	1.5 hrs	3 hrs
3¾ ips (9.5 cm/s)	3 hrs	6 hrs
1⅞ ips (4.8 cm/s)	6 hrs	12 hrs

Frequency Response: 30~18,000 Hz at 7½ ips (19 cm/s)
30~13,000 Hz at 3¾ ips (9.5 cm/s)
30~ 7,000 Hz at 1⅞ ips (4.8 cm/s)

Signal-to-Noise Ratio: 50 dB or more

Flutter and Wow: Less than 0.12% at 7½ ips (19 cm/s)

Power Output: 4W maximum per channel

Recording Bias Frequency: Approx. 85 kHz

Inputs: Two MIC inputs
Impedance : 600Ω
Maximum sensitivity : 0.19 mV (-72dB)
Two AUX INputs
Impedance : 100kΩ
Maximum sensitivity : 60mV (-12 dB)
REC/PB connector
Impedance : 10kΩ
Maximum sensitivity : 4.8mV (-44 dB)

Outputs: Two LINE OUTputs
Impedance : 100 kΩ
Output level : 0.39V (-6 dB)
REC/PB connector
Impedance : 1 kΩ
Output level : 0.775V (0 dB)
Two SPEAKER outputs
Impedance : 8Ω load
Output level : 2.7V (+11 dB)
PHONE output
Impedance : 8Ω load
Output level : 30mV (-28dB)

Speaker: Two 5" (130mm) dynamic speakers
Voice coil impedance : 8Ω

Semiconductors: 20 transistors and 3 diodes

Dimensions: 16¹⁄₁₆ (W) x 10⅛ (H) x 15" (D) (408 x 256 x 380 mm)

Weight: 29lb 11oz (13.5kg)

SONY®

SERVICE MANUAL

14

TABLE OF CONTENTS

		Page
	SPECIFICATIONS	1
1.	GENERAL DESCRIPTION	2
2.	BLOCK DIAGRAM	2
3.	CABINET TOP VIEW	3
4.	CABINET BACK VIEW	3
5.	DISASSEMBLY	4
6.	CHASSIS TOP VIEW	5
7.	CHASSIS BOTTOM VIEW	5
8.	MECHANICAL ADJUSTMENT	6 ~ 8
9.	ELECTRICAL ADJUSTMENT	9 ~ 10
10.	MOUNTING DIAGRAM	
	SOS switch board	
	Conductor side	12
	Component side	12
	Speaker switch board	
	Conductor side	12
	Component side	12
	Preamp., power amp., bias osc. & power supply boards	
	Conductor side	13 ~ 14
	Component side	15 ~ 16
11.	SCHEMATIC DIAGRAM	17 ~ 18
12.	WIRING DIAGRAM	19 ~ 20
	HARDWARE NOMENCLATURE	21
13.	EXPLODED VIEW	
	Packing	21
	Cabinet–Top view–	22
	Head deck–Top view–	23
	Control chassis–Top view–	24
	Chassis–Top view–	25
	Chassis–Bottom view–	26

1. GENERAL DESCRIPTION

The SONY Model TC-252 is a four-track stereophonic tape recorder which may be operated in either vertical or horizontal position. The all silicon transistor amplifier circuit is specially designed for low noise and low distortion performance and represents the latest techniques from SONY engineers.

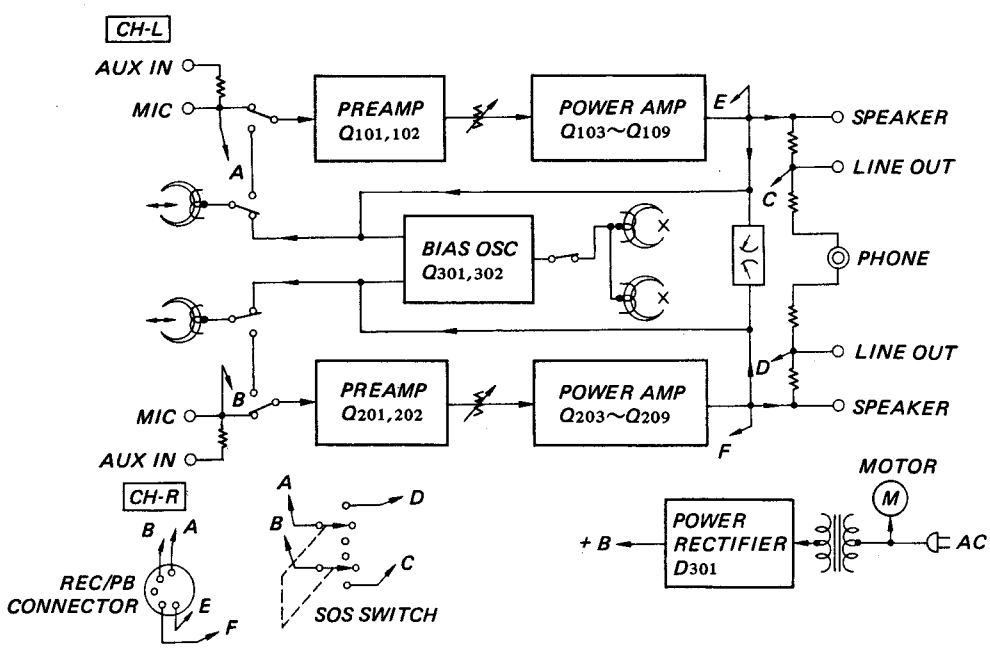
Outstanding features:

Sound-on-sound recording – Material recorded on one channel may be re-recorded on the other channel while simultaneously adding new material from an outside source. The mixed product appears in composite recording on the second channel. A SOS switch is provided on the panel for this special technique, which may be performed from left to right channels or vice-versa.

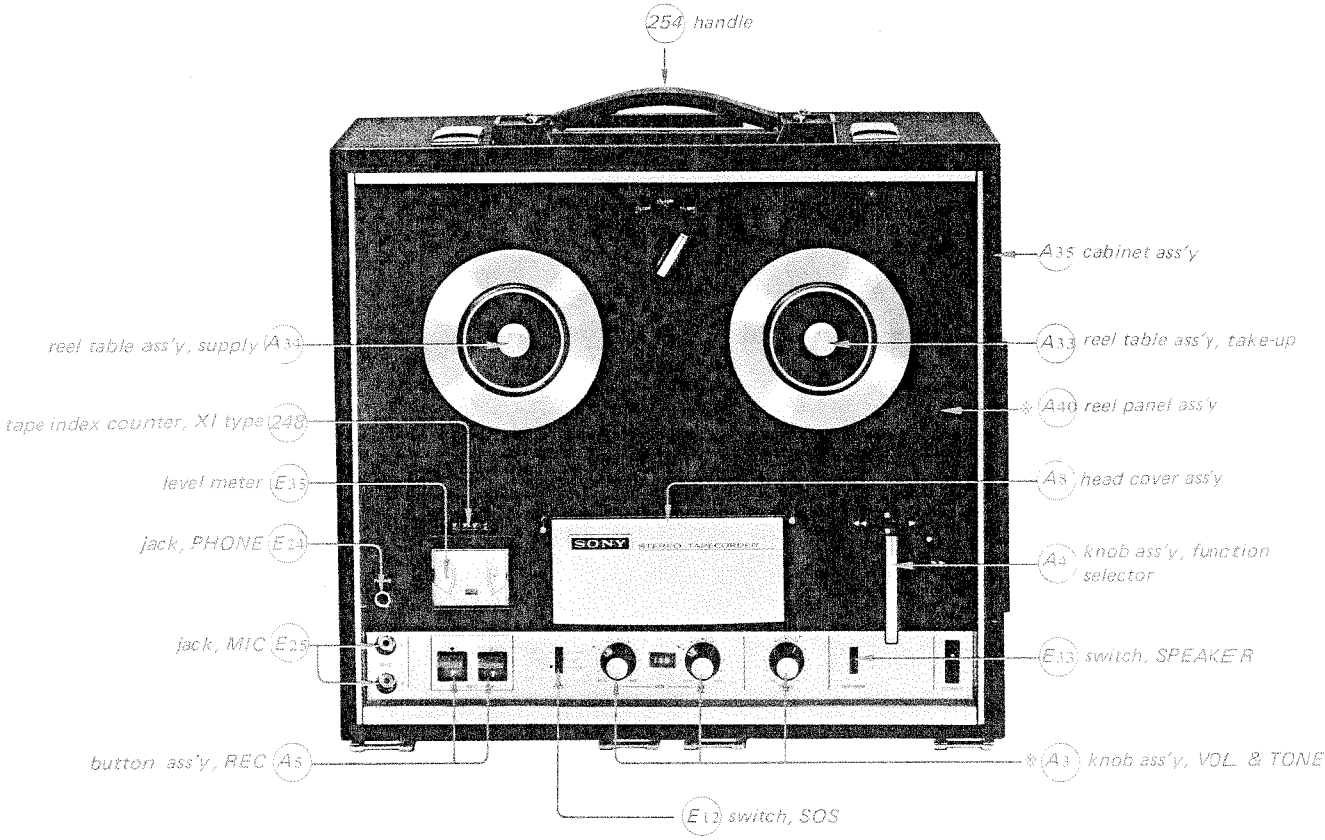
Scrape Flutter Filter – – This is a roller which is located between the erase head and the record/playback head. It prevents the tape from developing longitudinal vibrations which can result in tape squeal or frequency modulated distortion of the tape movement across the heads.

Retractable Pinch Roller– – The pinch roller is automatically retracted when the recorder is placed in the stop mode. This simplifies tape threading greatly by opening the tape path.

2. BLOCK DIAGRAM

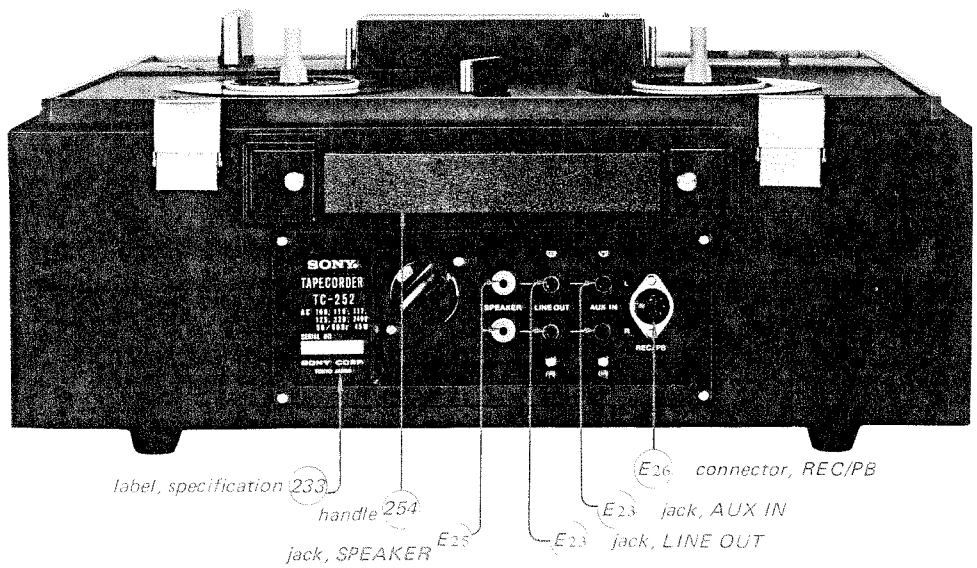


3. CABINET TOP VIEW

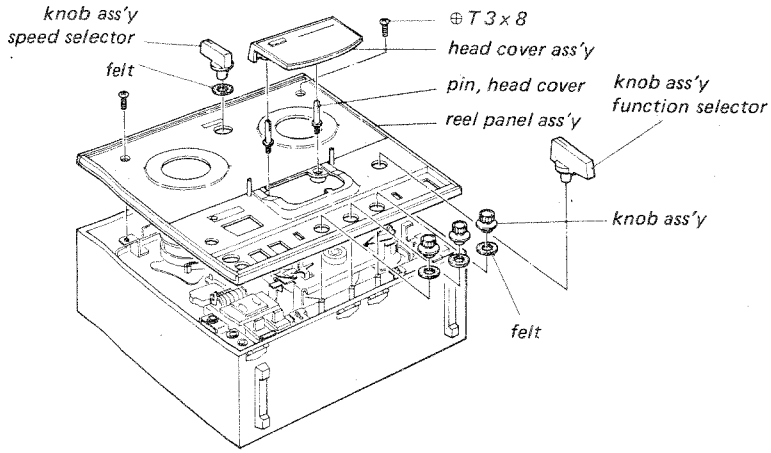

254 handle
A35 cabinet ass'y
reel table ass'y, supply A34
A33 reel table ass'y, take-up
tape index counter, XI type 248
※ A40 reel panel ass'y
level meter E35
A8 head cover ass'y
jack, PHONE E24
A9 knob ass'y, function selector
jack, MIC E25
E33 switch, SPEAKER
button ass'y, REC A5
※ A3 knob ass'y, VOL. & TONE
E12 switch, SOS

Ref. No.	Description	Serial No. up to 23,000		Serial No. 23,001 and later	
		Part No.	Color	Part No.	Color
※ A3	Knob Ass'y	X-34600-03-1	black	X-34600-03-5	silver
※ A40	Reel Panel Ass'y	X-34630-06-1	black	X-34630-06-2	white

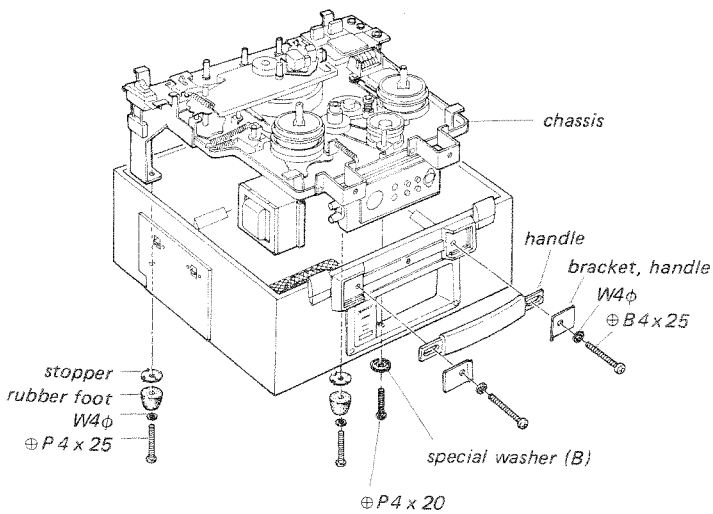
4. CABINET BACK VIEW



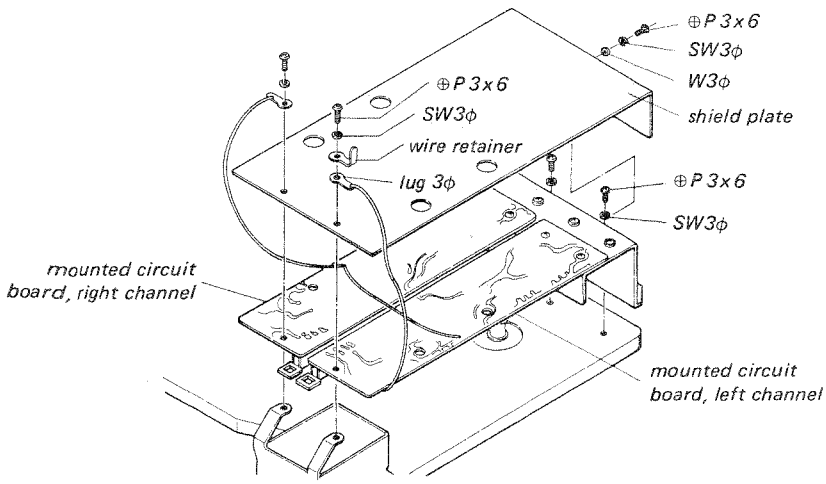
Reel panel removal



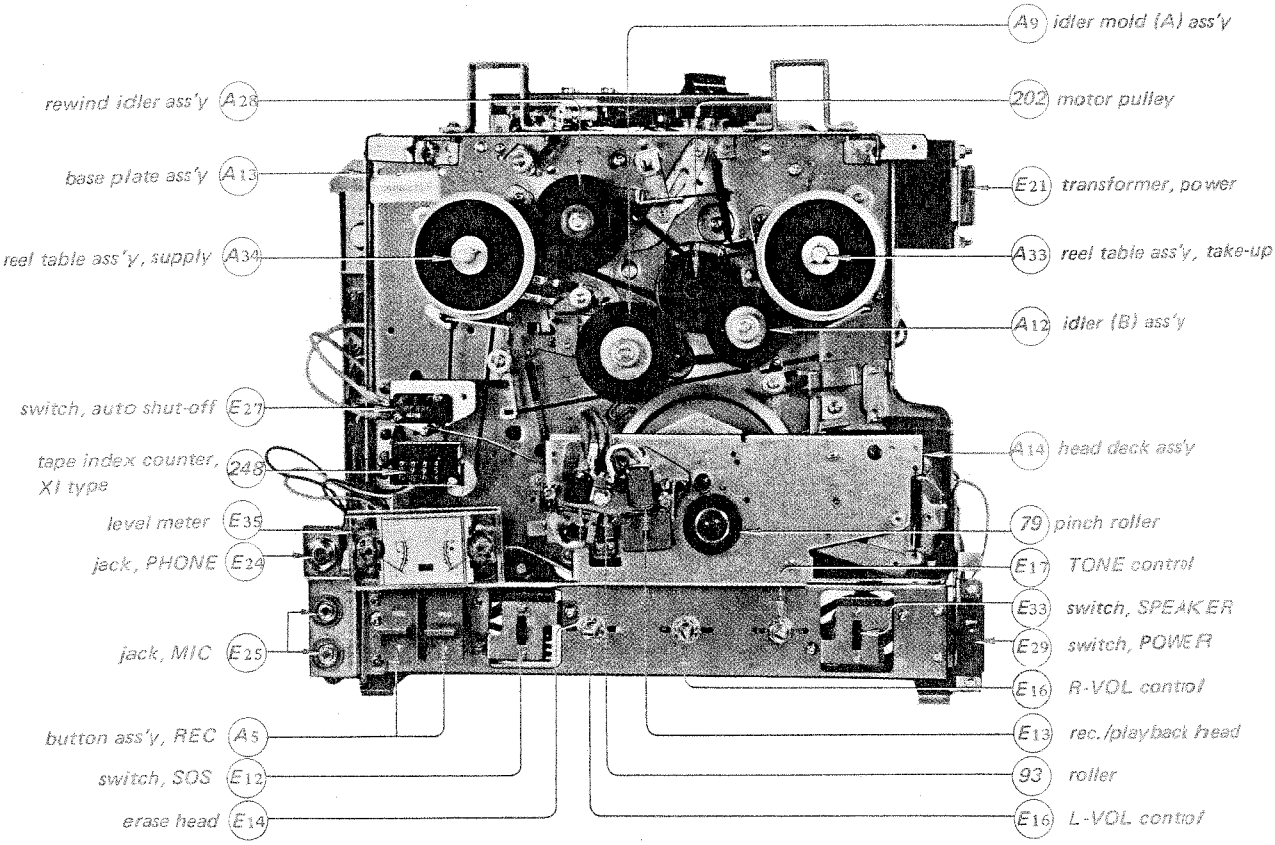
Chassis removal



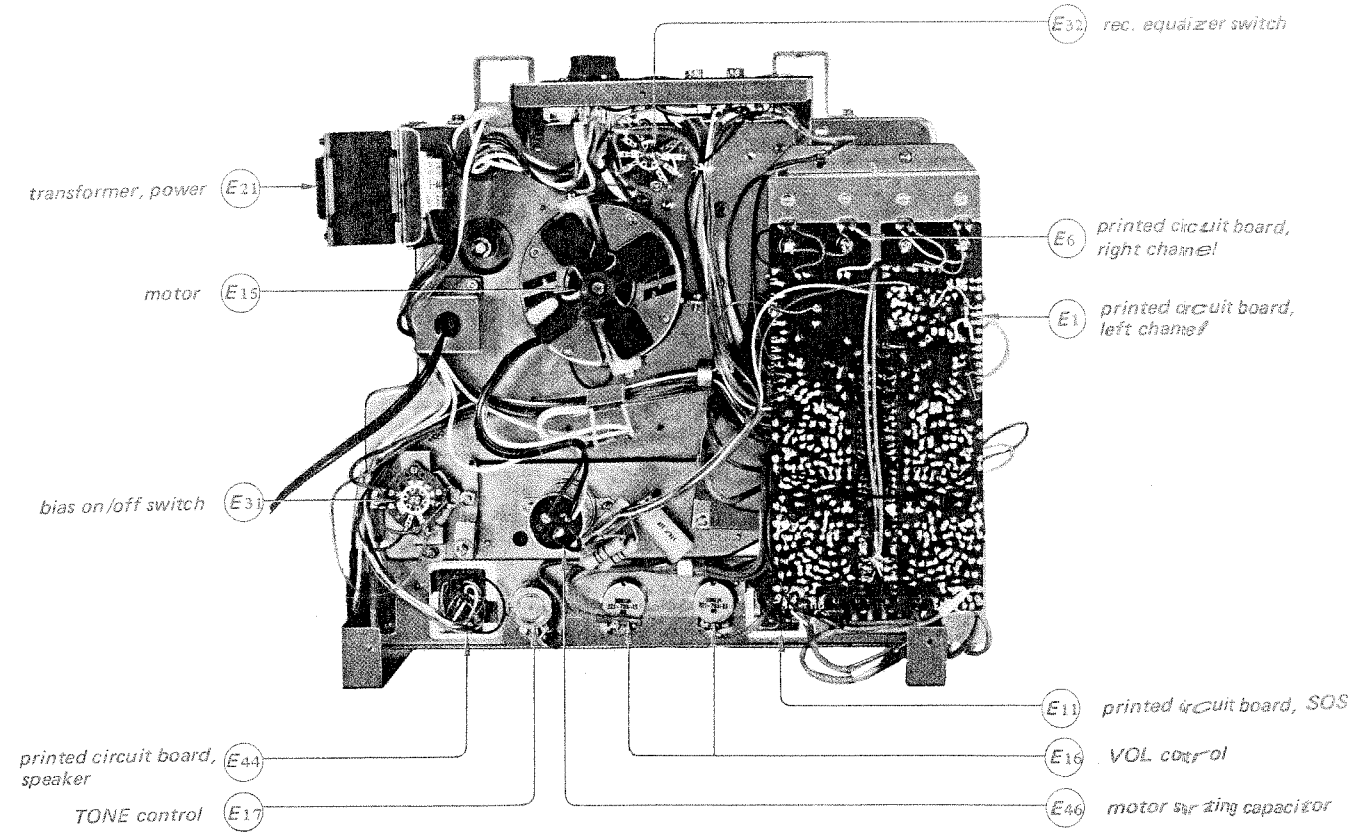
Circuit boards removal

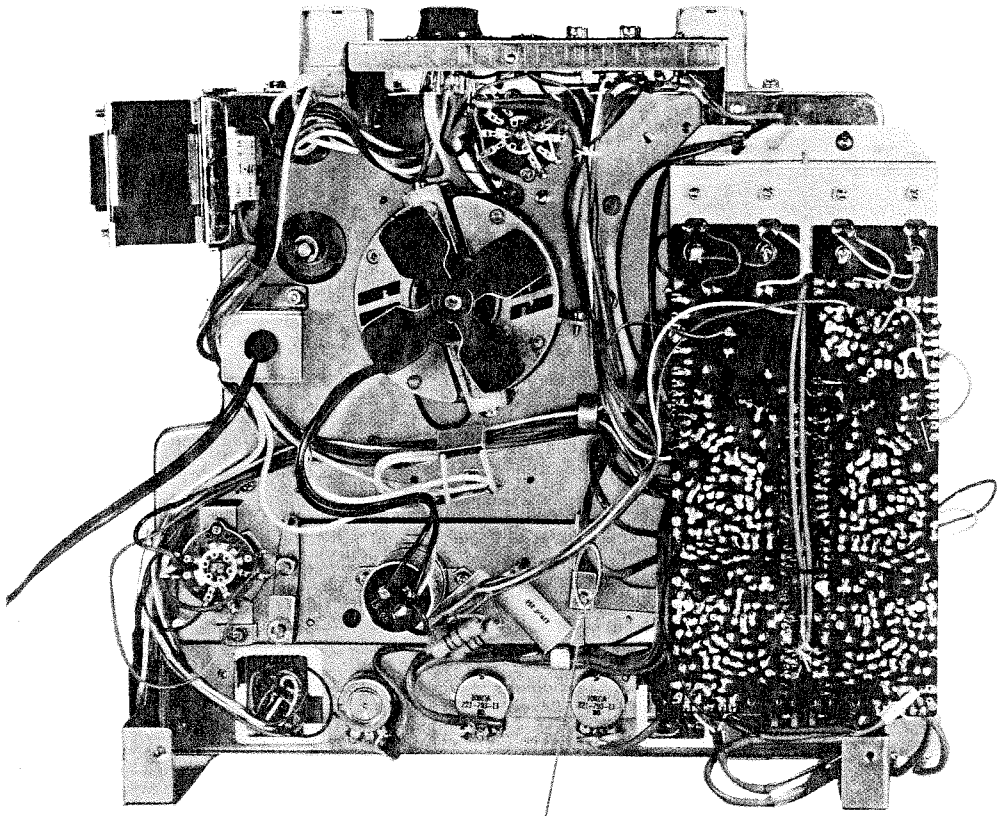


6. CHASSIS TOP VIEW

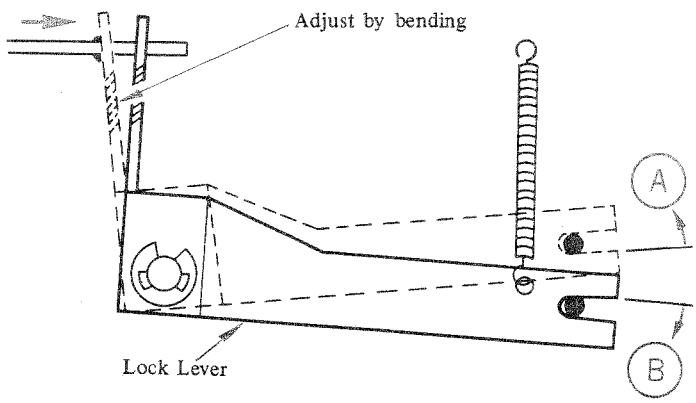


7. CHASSIS BOTTOM VIEW


E32 rec. equalizer switch
transformer, power E21
E6 printed circuit board, right channel
motor E15
E1 printed circuit board, left channel
bias on/off switch E31
E11 printed circuit board, SOS
printed circuit board, speaker E44
E16 VOL control
TONE control E17
E46 motor starting capacitor

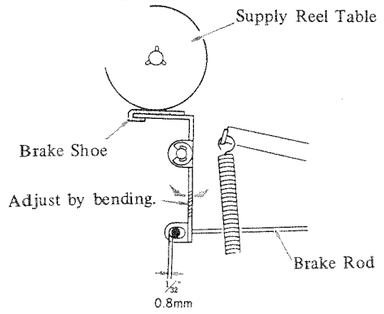


Record Switch Lock Lever Adjustment

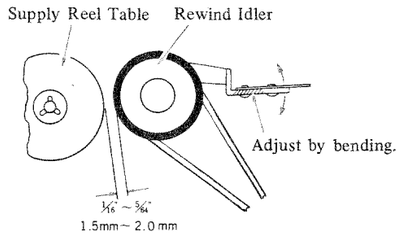


in STOP mode : The lever should be moved in the direction (B).
in modes except STOP : The lever should be moved in the direction (A).

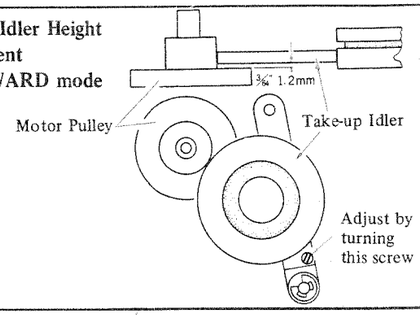
Brake (Supply) Adjustment in STOP mode



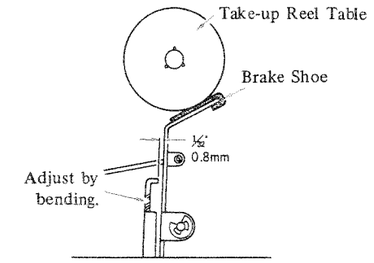
Rewind Idler Adjustment in STOP mode



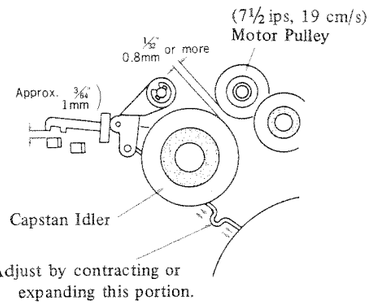
Take-up Idler Height Adjustment in FORWARD mode



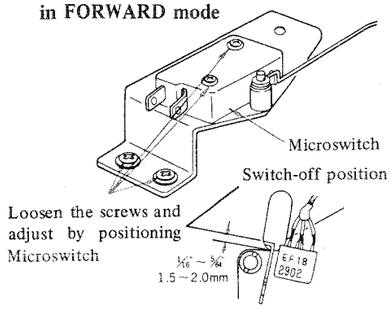
Brake (Take-up) Adjustment in STOP mode

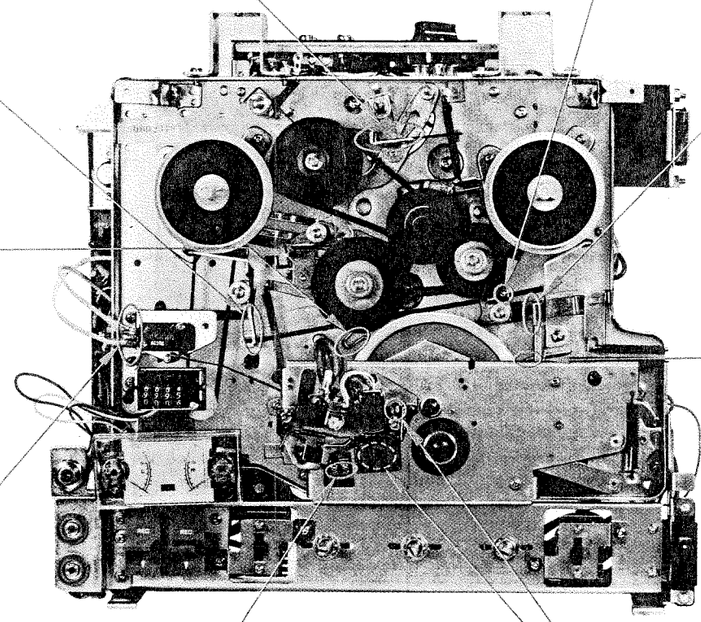


Capstan Idler Adjustment in STOP mode

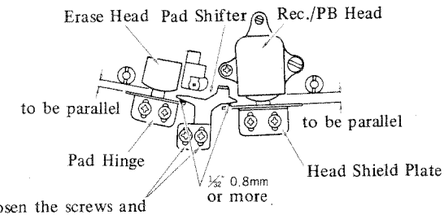


Automatic Shut-off Switch Adjustment in FORWARD mode

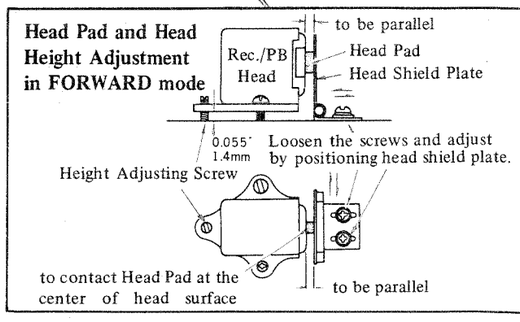




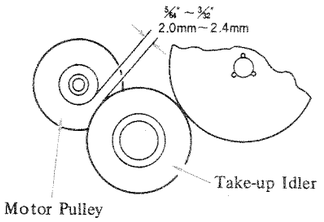
Head Pad Shifter Adjustment in FORWARD mode



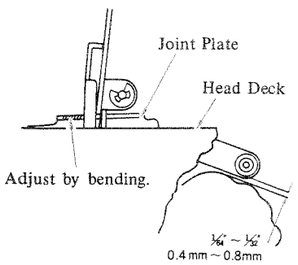
Head Pad and Head Height Adjustment in FORWARD mode



Take-up Idler Position Adjustment in STOP mode



in FORWARD mode



9 ELECTRICAL ADJUSTMENT

Item	Signal Source	Output Connection	Mode	Adjust	Remarks
1. Record/playback Head Azimuth Alignment	SONY Alignment Tape J-19-F 1, 1st tone, 10kHz (AMPEX Alignment Tape 01-31321-04, 2nd tone, 15 kHz) or equivalent	VTVM and 8Ω resistor in parallel with SPEAKER jack	playback	azimuth alignment screw See Fig. 1.	Adjust for maximum VTVM reading.
2. Bias Trap Adjustment	no signal	same as Item 1	playback and record	L101 (for CH-L) L201 (for CH-R) See Fig. 2.	1. Set CH-L (CH-R) VOL control to MAX and CH-R (CH-L) to MIN. 2. Place CH-L (CH-R) in playback mode and CH-R (CH-L) in record mode. 3. Adjust L101 (L201) for minimum VTVM reading on CH-L (CH-R).
3. Level Meter Calibration	1 kHz, -60 dB (78 μV) to MIC jack	same as Item 1	record	R145 (for CH-L) R245 (for CH-R) See Fig. 2.	1. Adjust CH-L (CH-R) VOL control to obtain 0 dB (0.775 V) on VTVM. 2. Adjust R145 (R245) so that the level meter indicates 100 on the scale.
4. Recording Bias Adjustment	no signal	VTVM across record/playback head	record	tap of bias osc. transformer T302 See Fig. 3.	Make sure that bias voltage across record/playback head is 20 V or more. See note 7 below. If not, change taps of osc. transformer T302.

Note:
1. Before making adjustments, be sure to clean heads with cloth or swab dampened with denatured alcohol and to demagnetize record/playback head with a head demagnetizer (SONY HE-2).
2. The adjustments should be made in numerical order.
3. The switches or controls should be set in the following positions:
   SOS switch: OFF SPEAKER switch: 2 TONE control: HIGH
4. The adjustments should be made at 7½ ips (19 cm/s) tape speed.
5. After adjustment, apply lock paint to the parts adjusted.
6. The following test equipment is to be used for the adjustments:
   * Audio signal generator
   * Attenuator 600Ω
   * VTVM
   * Resistor 8Ω 10W
   * SONY Alignment Tape J-19-F1 (AMPEX Alignment Tape 01-31321-04) or equivalent.
7. Bias voltage across heads should be read on VTVM as follows:
   record/playback head: approx. 21 V
   erase head: approx. 45 V

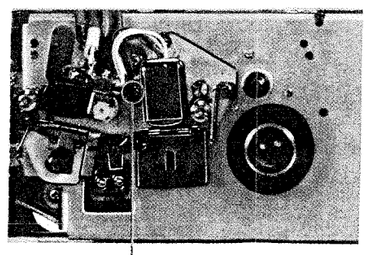


Fig. 1 Adjusting parts location for item 1

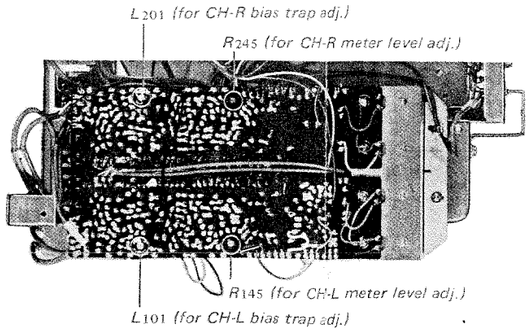


Fig. 2 Adjusting parts location for items 2 and 3

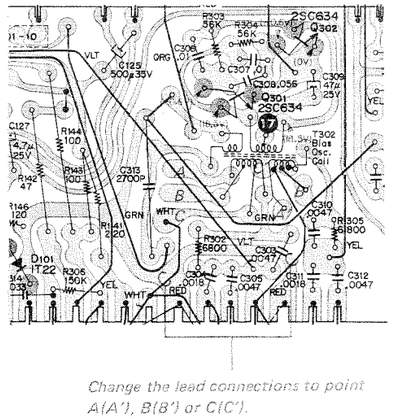
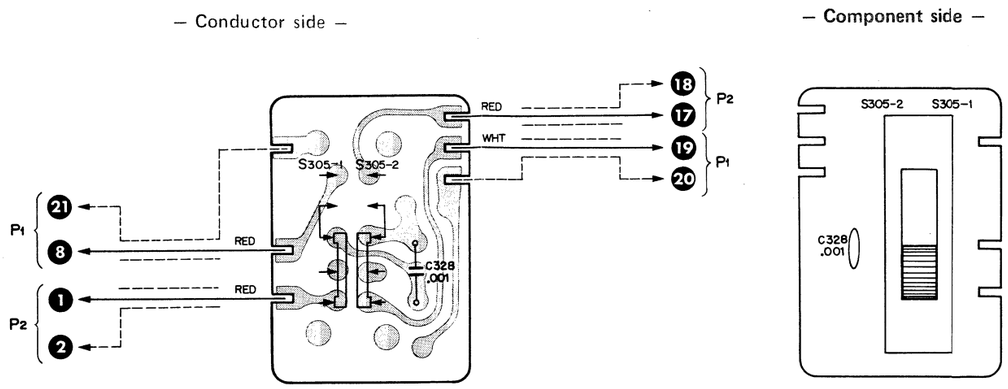


Fig. 3 Mounting diagram of bias osc. section

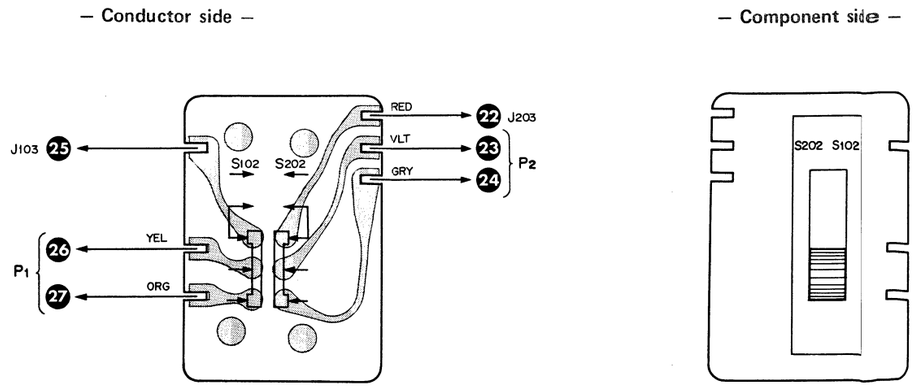
MEMO

10. MOUNTING DIAGRAM

SOS switch board P3



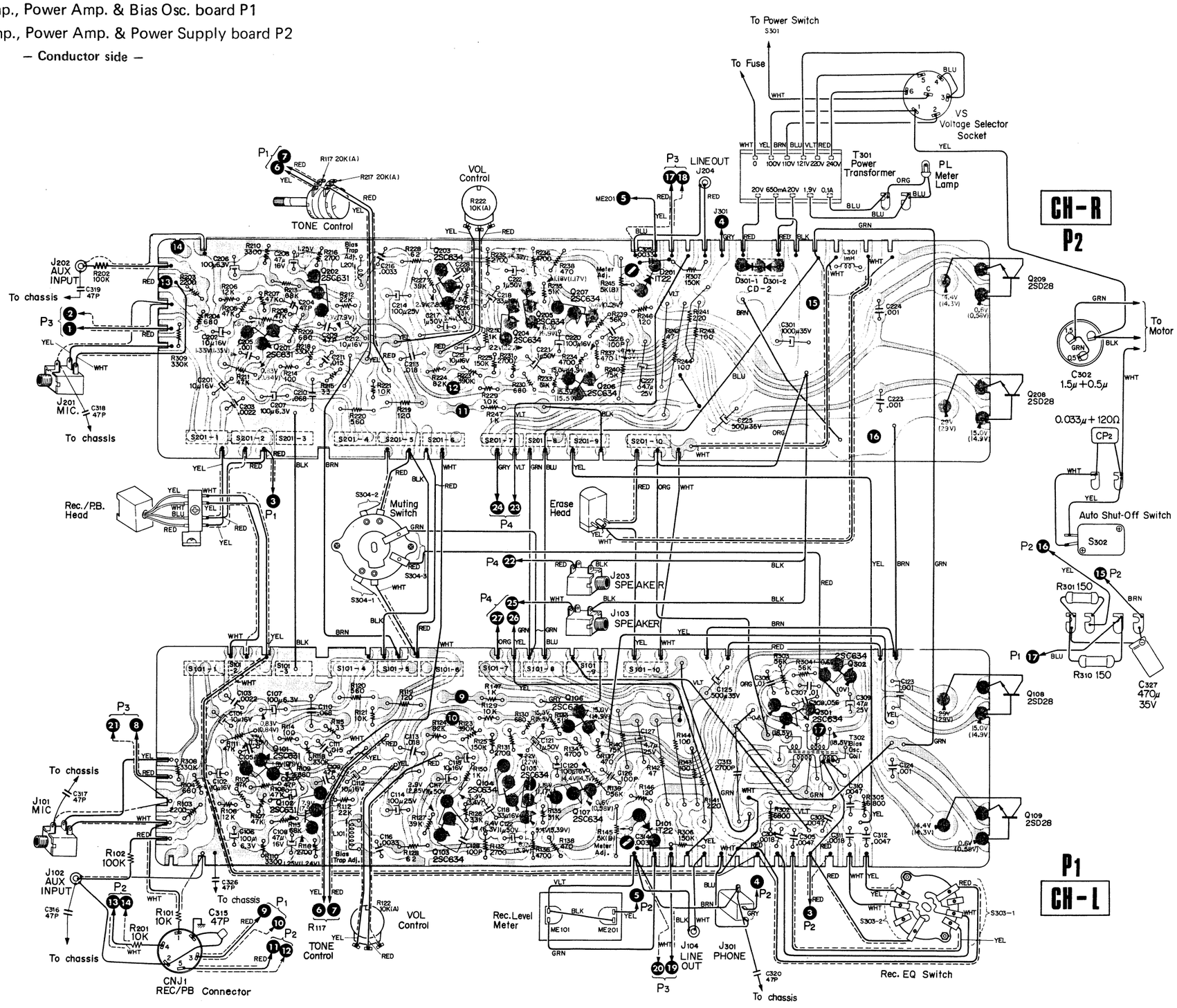
Speaker switch board P4



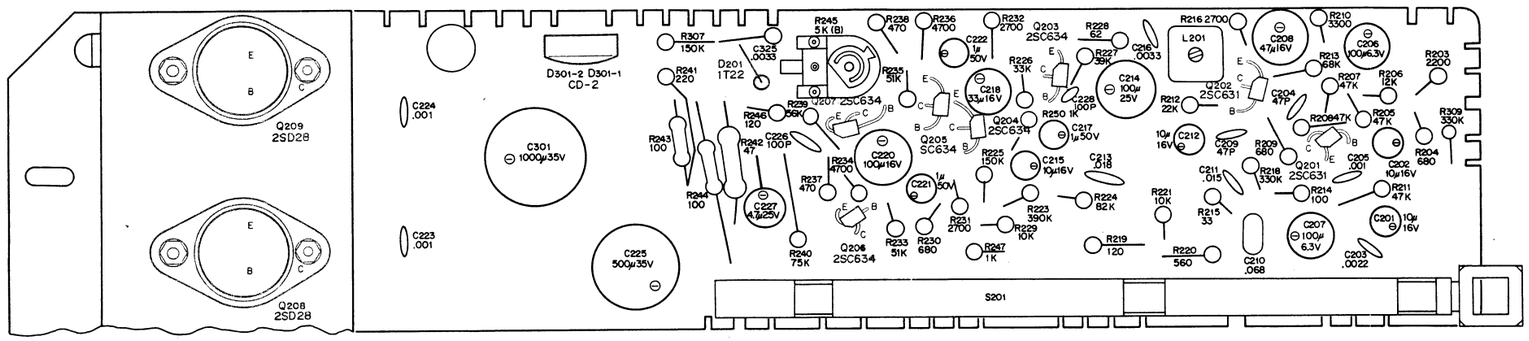
CH-L Preamp., Power Amp. & Bias Osc. board P1

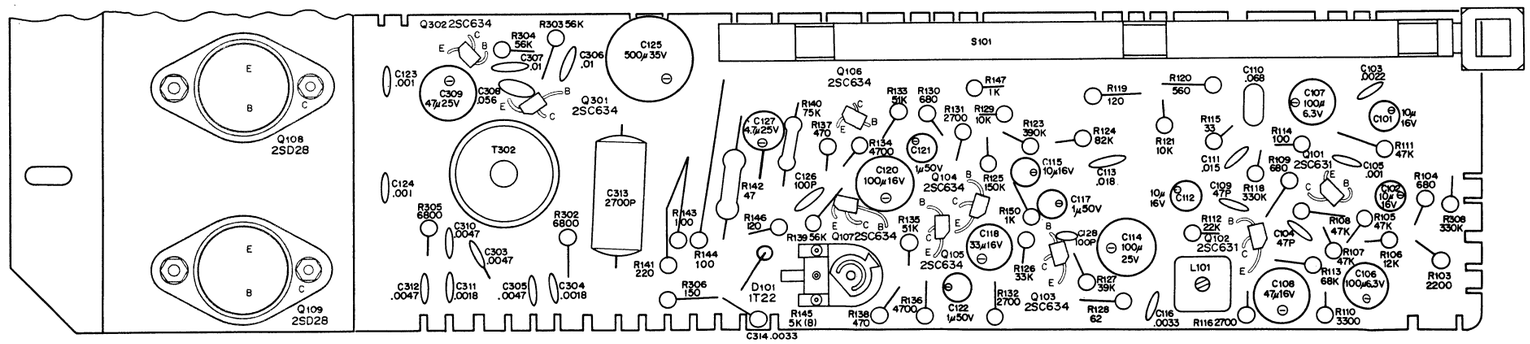
CH-R Preamp., Power Amp. & Power Supply board P2

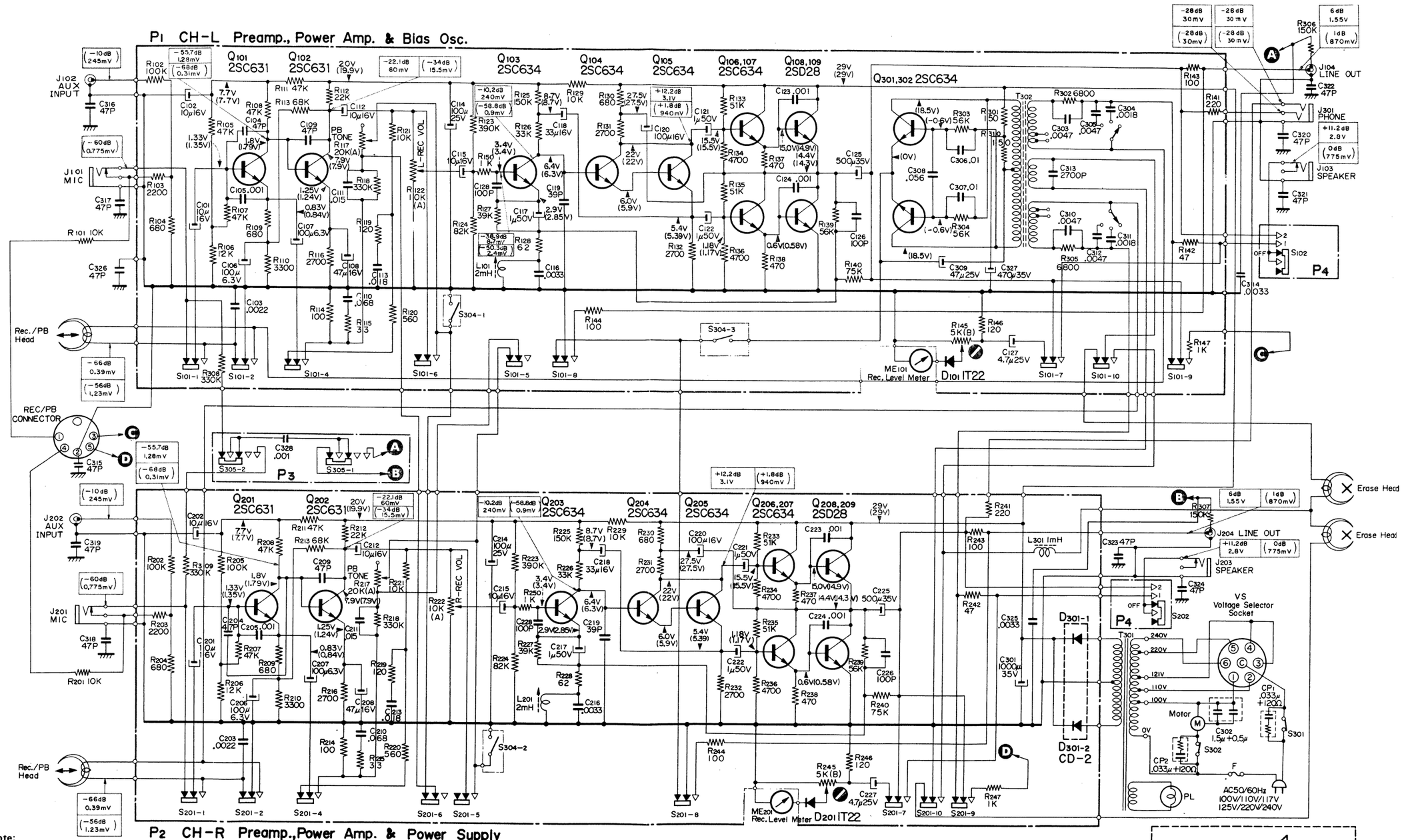
– Conductor side –



— Component side —



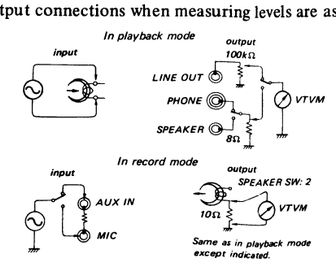




Note:

1. All resistors and capacitors are rated in Ω and μF unless otherwise specified.
2. ⊘ : adjustable
3. ⏚ : grounded to chassis
4. The letter (A) or (B) suffixed to rating value of potentiometer indicates its characteristics.
5. DC voltages shown in ORANGE color are measured to ground circuit with a VTVM. Values in ( ) are taken in record mode.
   Variations may be noted due to normal production tolerances.
6. Signal levels shown in BLUE color are measured with a VTVM delivering 1 kHz input signal. Values in ( ) are taken in record mode stopping bias oscillation. 0 dB=0.775V

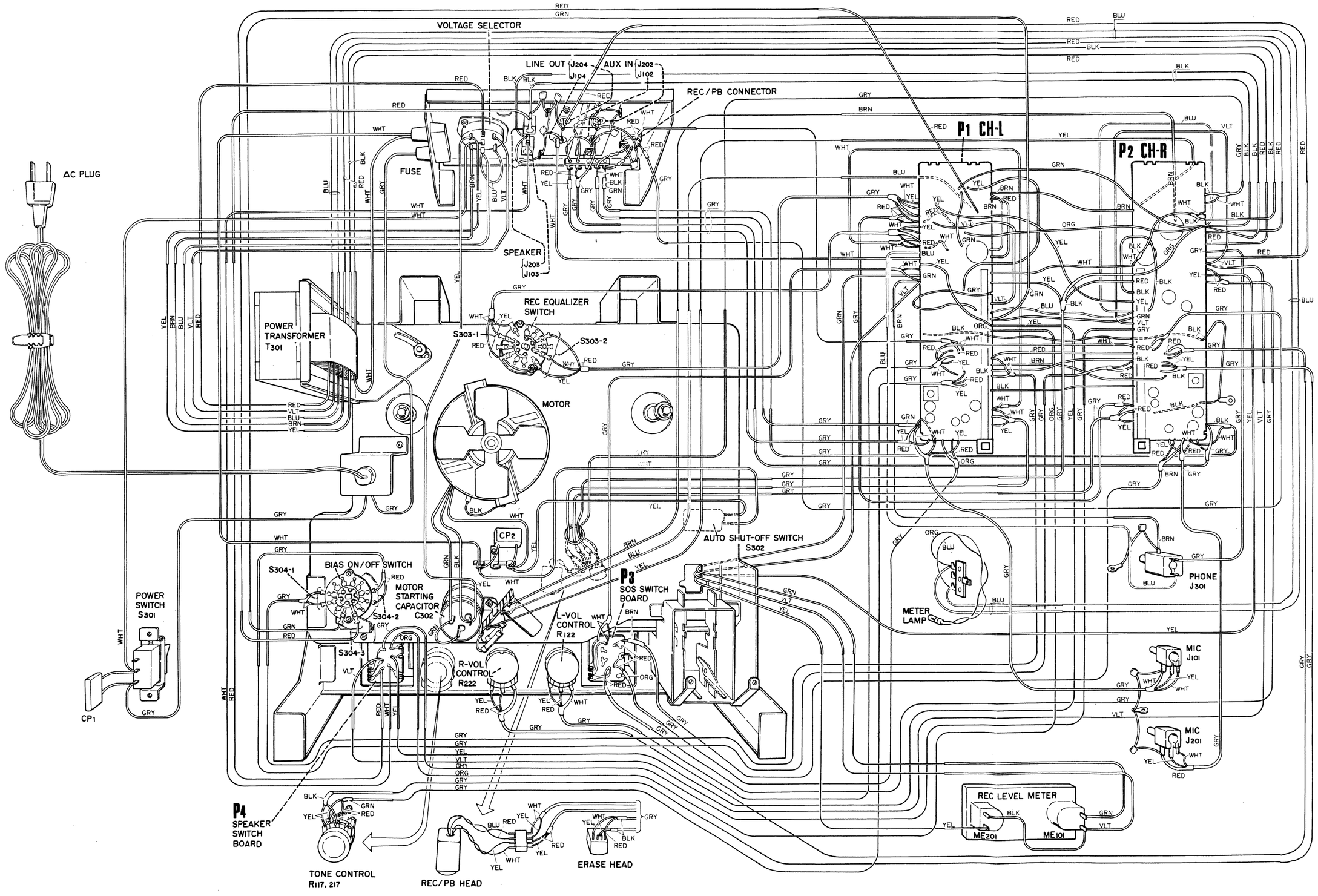
Input and output connections when measuring levels are as follows:



7. Switch positions are shown in the following table.

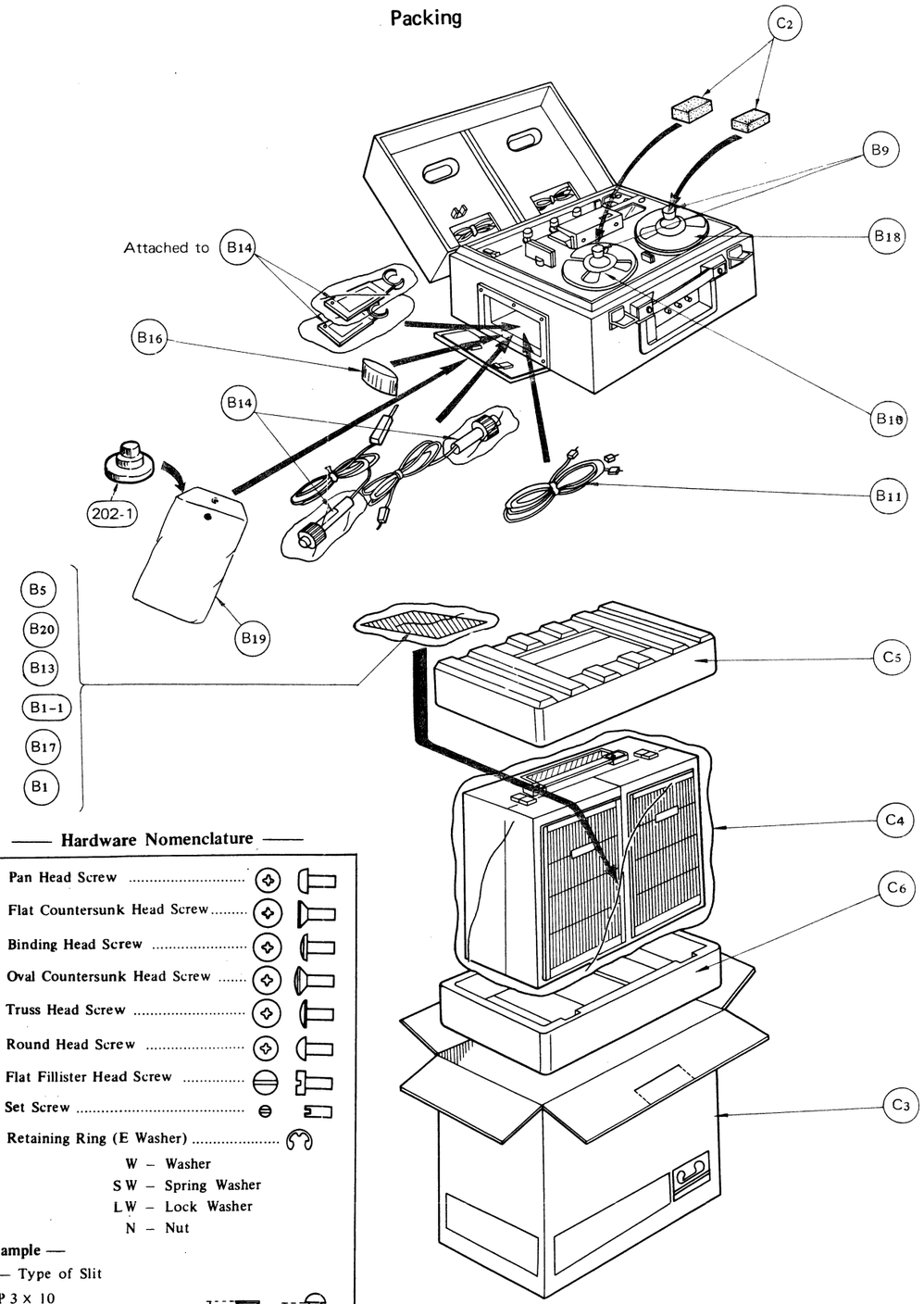
Symbol	Description	Position
S101, 201	Record/playback switch	record
S102, 202	SPEAKER switch	OFF
S301	POWER switch	ON
S302	Auto shut off switch	ON
S303	Record equalizer switch	7½" 19 cm
S304-3	Bias osc. on/off switch	OFF
S304-1 -2	Muting switch	OFF
S305	SOS switch	L → R

12. WIRING DIAGRAM



13. EXPLODED VIEW

Packing



Hardware Nomenclature

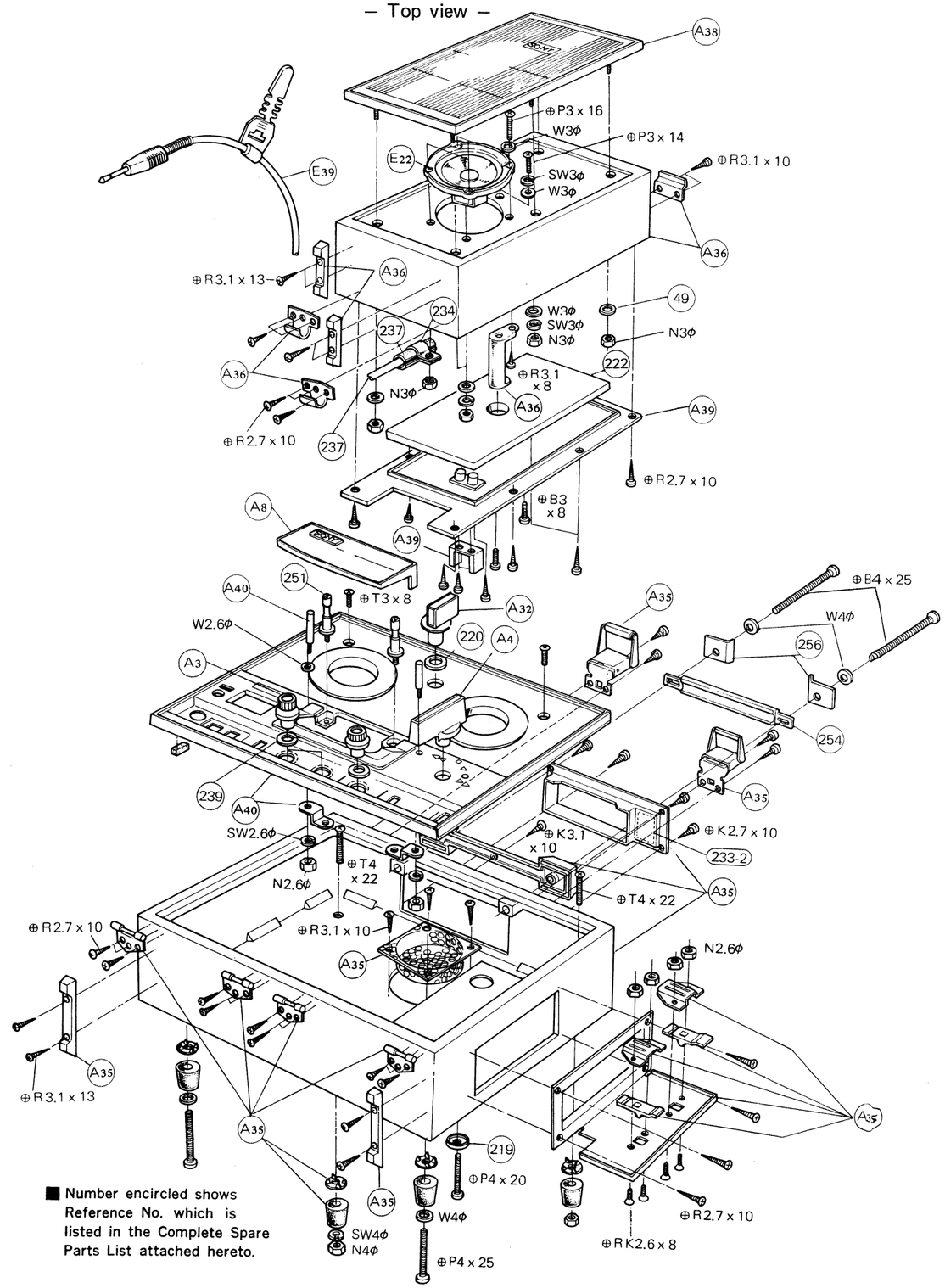
P	– Pan Head Screw	⊕
K	– Flat Countersunk Head Screw	⊕
B	– Binding Head Screw	⊕
RK	– Oval Countersunk Head Screw	⊕
T	– Truss Head Screw	⊕
R	– Round Head Screw	⊕
F	– Flat Fillister Head Screw	⊖
SC	– Set Screw	⊖
E	– Retaining Ring (E Washer)	

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

— Example —

⊕ P 3 x 10
- Type of Slit
- Length in mm (L)
- Diameter in mm (D)
- Type of Head

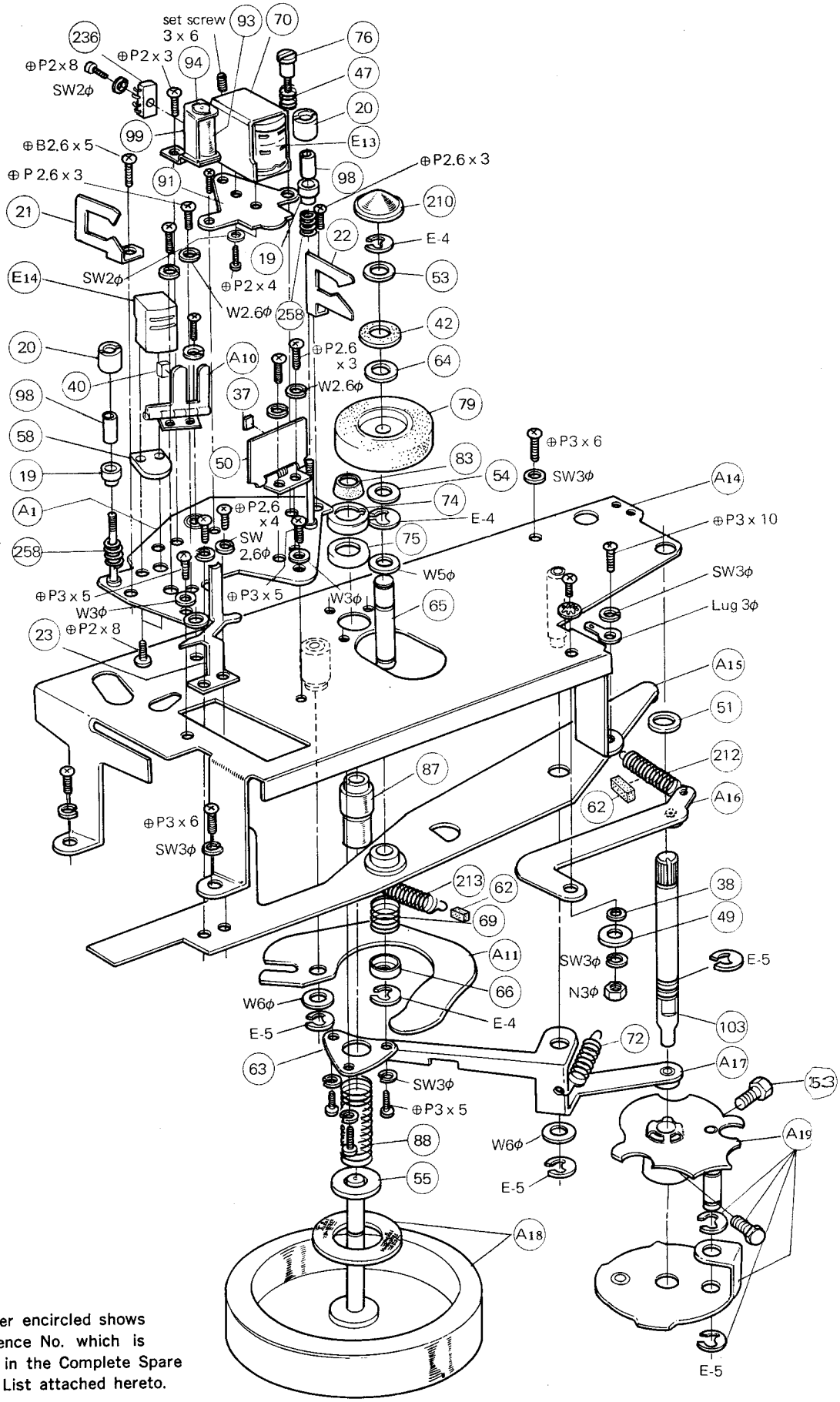
Cabinet
— Top view —



■ Number encircled shows Reference No. which is listed in the Complete Spare Parts List attached hereto.

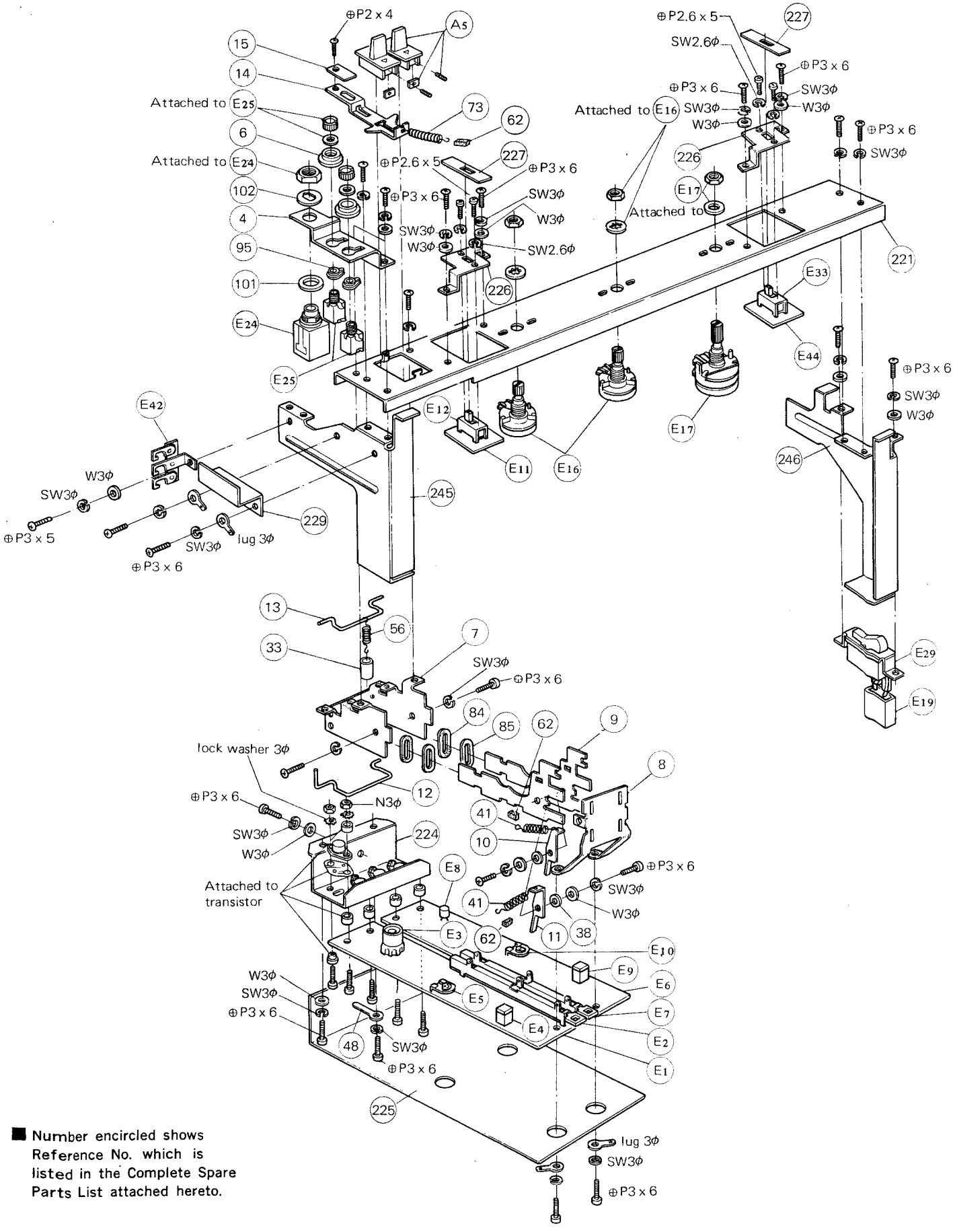
Head deck

– Top view –



■ Number encircled shows Reference No. which is listed in the Complete Spare Parts List attached hereto.

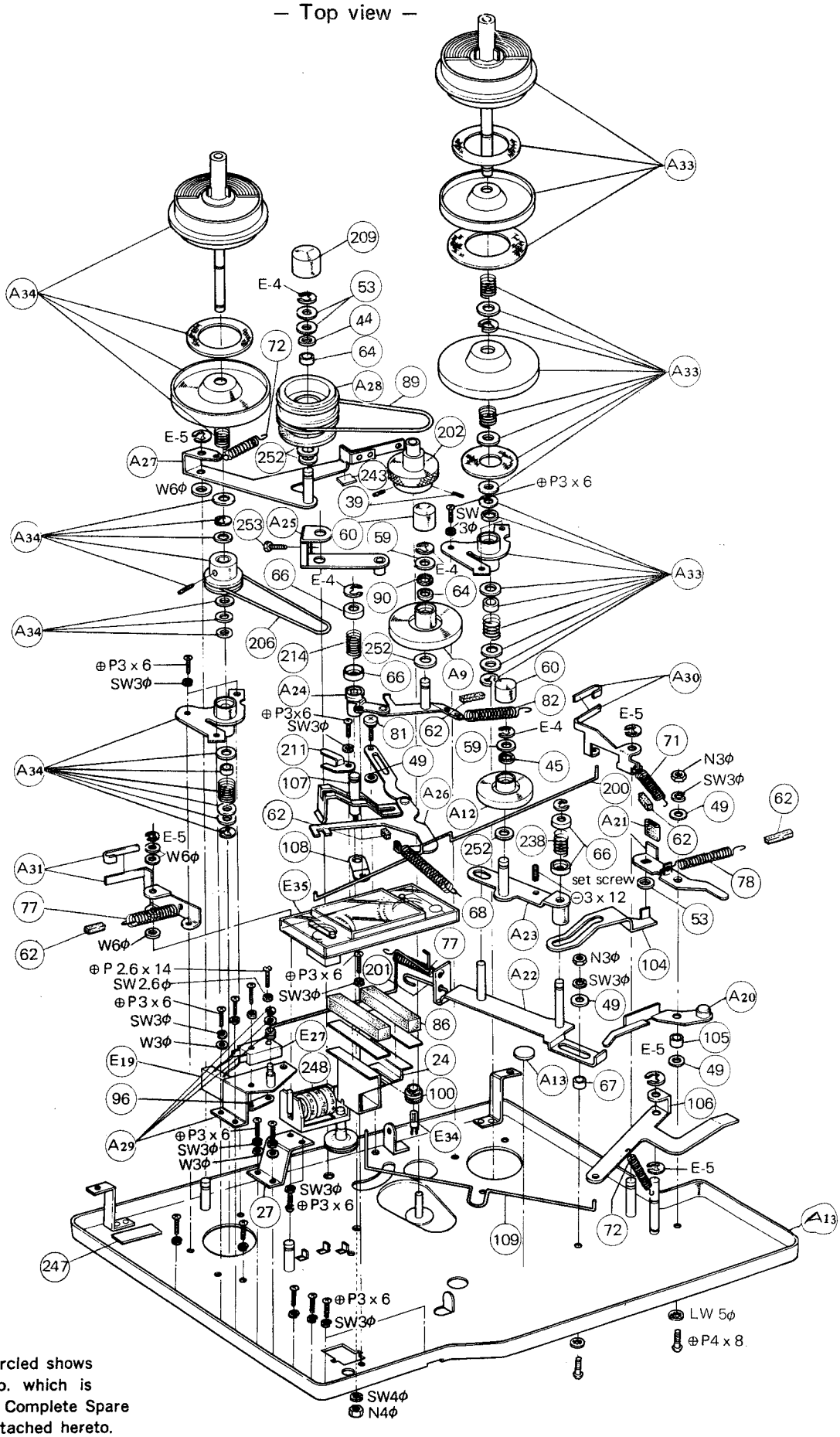
Control chassis
– Top view –



■ Number encircled shows Reference No. which is listed in the Complete Spare Parts List attached hereto.

Chassis

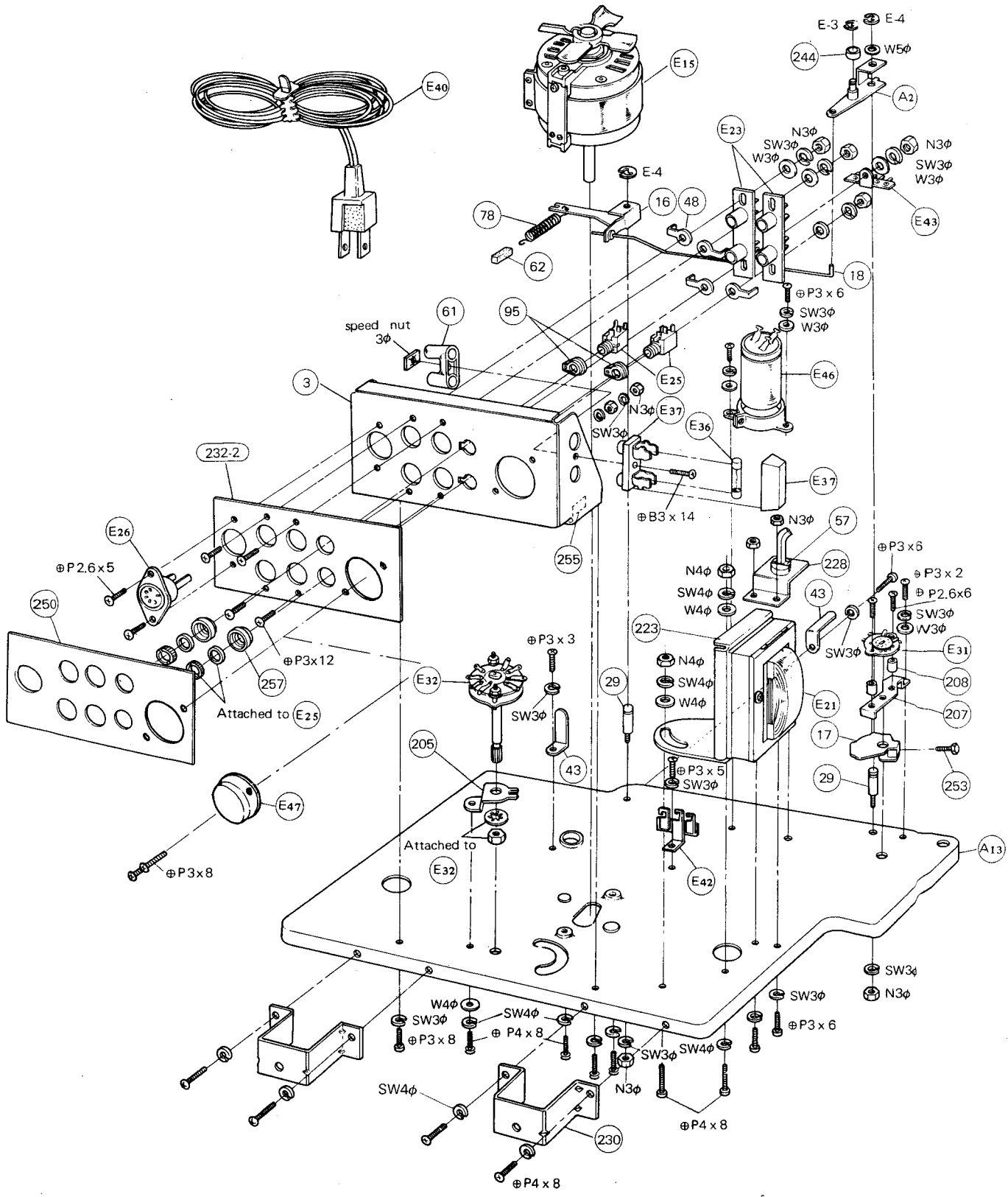
— Top view —



■ Number encircled shows Reference No. which is listed in the Complete Spare Parts List attached hereto.

TC-252

Chassis
— Bottom view —



When ordering replacement parts you should use PART NUMBER listed on the Complete Spare Parts List attached hereto.
The reference number or symbol number should not be used for ordering purposes.

■ Number encircled shows Reference No. which is listed in the Complete Spare Parts List attached hereto.

SONY CORPORATION